BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the matter of the amendment of ARM 17.30.670 and 17.30.1202 pertaining to nondegradation requirements for electrical conductivity (EC) and sodium adsorption ratio (SAR) and definitions for technology-based effluent limitations, and the adoption of new rules I through X pertaining to minimum technology-based controls and treatment requirements for the coal bed methane industry	NOTICE OF AMENDMENT (WATER QUALITY)

TO: All Concerned Persons

1. On October 6, 2005, the Board of Environmental Review published MAR Notice No. 17-231 regarding a notice of public hearing on the proposed amendment and adoption of the above-stated rules at page 1844, 2005 Montana Administrative Register, issue number 19. On November 23, 2005, the board published MAR Notice No. 17-236 regarding a notice of extension of comment period on the proposed amendment and adoption of the above-stated rules at page 2288, 2005 Montana Administrative Register, issue number 22.

2. The board has not adopted the proposed amendments to ARM 17.30.1202 and has not adopted proposed New Rules I through X. The board has amended ARM 17.30.670 as proposed, but with the following changes, new matter underlined, stricken matter interlined:

17.30.670 NUMERIC STANDARDS FOR ELECTRICAL CONDUCTIVITY (EC) AND SODIUM ADSORPTION RATIO (SAR) (1) through (6) remain as proposed.

~~(7) For purposes of determining compliance with the water quality standards and nonsignificance criteria for all parameters of concern in discharges of methane wastewater, the department shall determine compliance limits by using 7Q10 flows.~~

3. The following comments were received and appear with the board's responses:

NONDEGRADATION

COMMENT NO. 1: The board has the authority and the obligation to amend the unconstitutional provision of its previously enacted rule that exempts SAR and EC from nondegradation review.

RESPONSE: The board disagrees that the current rules exempt EC and SAR from nondegradation review. Under the current rules, discharges of EC and

SAR may not have a "measurable effect on existing or anticipated uses or cause measurable changes in aquatic life or ecological integrity." This means that, in addition to requiring compliance with the nondegradation criteria for all other parameters that are present in CBNG wastewater, the department will impose any additional restriction necessary to prevent a measurable change to existing or anticipated uses that may result from EC and SAR. While the commentor contends that the current rule is unconstitutional, the current rule does not exempt CBNG discharges from all review under Montana's nondegradation policy as did the rule at issue in MEIC v. DEQ. Consequently, the board does not agree that the current rule is constitutionally flawed. Nonetheless, the board is changing the current rules for EC and SAR as explained in the board's following responses.

COMMENT NO. 2: Adoption of the proposed "harmful" criteria for EC and SAR is arbitrary and capricious because there is no evidence that Montana's current rule is inadequate to protect existing uses. The current rule, which prohibits discharges if there is any "measurable change" to aquatic life or ecological integrity of the stream, properly focuses on protecting existing uses. The proposed rule would impose unrealistic, de facto standards that represent a fraction of the levels of EC and SAR that could impair existing uses.

RESPONSE: The purpose of the proposed nonsignificance criteria for EC and SAR is not to protect existing uses, but to prevent the degradation of "high quality" waters, i.e., waters with quality better than that required by water quality standards. And while the board agrees that there is no evidence to suggest that the existing uses are not being protected by the current rules, the board does not agree that the "high quality" waters in the Powder River Basin are being adequately protected from degradation under the current rules.

COMMENT NO. 3: Federal regulations implementing Section 303(c) of the CWA mandate that a state's water quality standards specify the designated uses of the water body and establish criteria that will protect those uses. The criteria adopted by the states are subject to EPA approval. Under 40 CFR 131.11, EPA must reject state-adopted criteria that are not based upon a "sound scientific rationale." By adopting numeric nonsignificance criteria for EC and SAR, the board is effectively adopting a numeric standard that will supersede the numeric standards adopted in 2003 without a "sound scientific rationale" for doing so. As such, the proposed rule violates federal regulations.

RESPONSE: The numeric standards adopted in 2003 for EC and SAR were based on "sound science" and were established for the purpose of protecting designated uses. In this rulemaking, the board is not changing or replacing those numeric standards with more stringent standards as stated by the commentor. Rather, the new rule will change only the manner in which the department determines whether a "significant" change in existing levels of EC and SAR would occur. If a change in EC and SAR is deemed significant under the proposed "harmful" category, then an applicant would need an authorization to degrade prior to discharging. Since the "harmful" category is being adopted as a means to determine significant changes in existing quality rather than as a standard to protect

uses, the proposed rule is not subject to EPA's regulations requiring "sound scientific rationale" for criteria adopted under Section 303(c) of the CWA.

COMMENT NO. 4: The board is required to establish criteria for nonsignificant changes in water quality in a manner that equates significance with harm pursuant to 75-5-301(5), MCA. Although the statute contemplates that the board supports its conclusion of "harm" with sound scientific analyses, the board has failed to demonstrate that the new criteria for EC and SAR is necessary to protect human health, a beneficial use, or the environment.

RESPONSE: As indicated in the Responses to Comment Nos. 2 and 3, the new "harmful" category for EC and SAR is not intended to protect beneficial uses, but to protect "high quality" waters from significant changes in existing quality. Although the statute requires the criteria be established in a manner that equates significance with the "potential for harm," the statute does not require evidence that the criteria are necessary to protect beneficial uses. The protection of uses is not the function of the nonsignificance criteria, but the function of the water quality standards.

COMMENT NO. 5: A series of communications between the department and EPA reveal the political motivation behind the new nonsignificance criteria for EC and SAR. Since the agencies concede that the upper Tongue River is not impaired, there is simply no reason to impose new restrictions for the upper Tongue River. Nonetheless, the new rule focuses exclusively on CBNG development at the border and does nothing to correct the impairment caused by the petitioner's irrigation practices in the lower Tongue River. The fact that the new criteria will not require the irrigators to correct the problem they created but will severely restrict CBNG development at the border demonstrates a political motivation to stop CBNG development in Wyoming.

RESPONSE: The motivation of other entities supporting the new criteria for EC and SAR cannot be imputed to the board. As explained earlier, the board is adopting the new criteria as a valid means of protecting the "high quality" waters of the Powder River Basin by classifying EC and SAR as "harmful." And although the practical effect of the rule will be to impose further restrictions on CBNG development in the upper Tongue River, the motivation for adopting the rule is prompted solely by the intent to protect water from degradation, not to punish CBNG developers in Wyoming, as suggested by the comment.

COMMENT NO. 6: The adoption of the proposed rules, particularly the designation of EC and SAR as "harmful," will put an end to the cooperative discussions between Wyoming and Montana regarding the Tongue, Powder, and Little Powder rivers. Rather than allow the two states to share the assimilative capacity of these important water bodies, the rules attempt to dictate how CBNG should be developed in Wyoming.

RESPONSE: Comment noted. The nondegradation rule change is adopted to protect "high quality" waters, not to dictate development in Wyoming.

COMMENT NO. 7: Federal regulations require EPA to ensure that state standards, which do not include the uses specified in Section 101 of the CWA, are based upon "appropriate technical and scientific data and analysis …." 40 CFR 131.5(a)(4). The uses specified in Section 101 of the CWA include "the propagation of fish, shellfish, and wildlife," as well as "recreation in and on the water." In instances such as this - where state standards go beyond the "fishable/swimmable" uses of the CWA to add even more protection for agricultural uses - EPA's regulations make clear that those standards must be based upon the appropriate technical and scientific data and analysis required under 40 CFR 131.5(a)(4). Since EPA's approval of Montana's narrative nonsignificance criteria for EC and SAR indicated that the current criteria exceed federal antidegradation requirements, EPA must require the proposed changes to EC and SAR be supported by sound science.

RESPONSE: The federal regulation requiring "appropriate technical and scientific data and analysis" for the adoption of state standards, which do not include the "fishable/swimmable" uses described in Section 101 of the CWA, applies only to standards adopted for the purpose of supporting the designated uses of a water body. Since the rule classifying EC and SAR as "harmful" is not a "standard" for the protection of beneficial uses, the rule is not subject to the requirement for "sound science" contained in 40 CFR 131.5(a)(4). Instead, EPA will review the rule for its consistency with federal regulations describing the requisite elements of a state's antidegradation policy and implementation procedures. See 40 CFR 131.12. The board believes that the rule classifying EC and SAR as "harmful" is consistent with EPA's rule requiring that the quality of "high quality" waters "be maintained and protected." 40 CFR 131.12(a)(2).

COMMENT NO. 8: Montana law requires that the board's criteria for EC and SAR link "significance" with the potential for harm. 75-5-301(5)(c)(1), MCA. There is no scientific evidence demonstrating that the current criteria are inadequate to protect against harm to public health and the environment. There is also no scientific evidence to support the board's primary rationale for adopting the new "harmful" criteria for EC and SAR, which is that: "Montana's nondegradation policy is necessary to protect the existing water quality of the Tongue River from degradation from methane discharges in Montana and Wyoming." Since there is no scientific evidence to suggest that CBNG discharges have had any effect on the quality of the Tongue River since development began in 1999, there is no scientific basis for claiming that Montana's nondegradation policy is necessary to protect the existing quality of the Tongue River.

RESPONSE: As explained earlier, the new nonsignificance criteria for EC and SAR are not intended to protect designated uses from harm, but to protect the existing quality of "high quality" waters pursuant to Montana's nondegradation policy. As such, scientific evidence demonstrating that the current criteria are inadequate is not necessary to support the board's adoption of more stringent nonsignificance criteria. Finally, since CBNG development in Wyoming has the potential to degrade the quality of the Tongue and Powder rivers, the board's rationale for amending the criteria for EC and SAR to impose further limits on degradation is a legitimate reason for adopting the amendment.

COMMENT NO. 9: Several commentors argued in support of categorizing EC and SAR as "harmful" for purposes of nondegradation. Others submitted information and data to support argument that current EC and SAR standards are overly protective and opposed categorizing EC and SAR as "harmful."

RESPONSE: The board finds that EC and SAR should be categorized as "harmful" for the purpose of implementing Montana's nondegradation policy. The board notes that the intent of Montana's nondegradation policy is to protect the increment of "high quality" water that exists between ambient water quality and the numeric water quality standards. The board also notes that it has the responsibility to adopt rules protecting "high quality" water where it exists, including the Tongue River and Rosebud Creek in the Powder River Basin. Given that numeric standards have been adopted for EC and SAR, the board is uncomfortable with the inconsistency of the current "narrative" classification of EC and SAR, which is used solely for parameters for which no numeric standards have been adopted. Since all other parameters with numeric water quality standards are classified as either carcinogenic, toxic, or harmful, the board believes that EC and SAR should be treated in a similar manner.

COMMENT NO. 10: The adoption of changes to ARM 17.36.670 for EC and SAR to be defined as harmful parameters is redundant undue regulation since there are numeric standards.

RESPONSE: The numeric water quality standards and the nondegradation policy are separate, yet complementary components of the state's water quality standards program. Each component of the program serves an independent and important function. The function of a numeric standard is to quantify the level determined to be protective of designated uses for a given pollutant whereas the purpose of a nondegradation policy is to protect "high quality" water. Since the nondegradation policy is the component that serves the purpose of protecting "high quality" water, designating how any pollutant, including EC and SAR, is categorized for purposes of determining significant changes in those waters is not redundant of the standards that protect beneficial uses. Consequently, the board believes that the nondegradation criteria being adopted for EC and SAR are necessary and do not constitute "undue regulation."

COMMENT NO. 11: The classification of EC and SAR should not be changed from narrative to harmful. SAR and EC are simply measures of water ionic properties and TDS, and all natural waters contain ions and TDS. Some levels of TDS are beneficial to both human health and ecologic health. Neither SAR nor EC is harmful under all or even most situations. While high levels of EC and SAR can have negative impacts on plants and animals, levels that are too low can also have negative impacts. The magnitude and interdependence of the EC and SAR values, in relation to the threshold between low risk and high risk, is key to determining whether the resulting quality of water is harmful or not. Therefore, from a technical standpoint, although EC and SAR provide an understanding of overall water quality, those parameters are not necessarily harmful.

RESPONSE: The fact that some substances are harmless or even beneficial in common concentrations in water is irrelevant. There are many substances for

which water quality standards are necessary to protect beneficial uses such as dissolved oxygen, pH, EC, and SAR, which are harmless or beneficial in many circumstances. However, the science and evidence presented to the board to support the 2003 adoption of EC and SAR standards clearly demonstrated that EC and SAR levels could reach levels that are detrimental to soils and sensitive crops in the Powder River Basin. Thus, the board adopted standards necessary to protect the most sensitive beneficial uses, i.e., irrigated agriculture, from adverse impact due to excessive quantities of EC and SAR in 2003. Since the board adopted numeric standards for these substances, the board also believes it is necessary to determine the appropriate nondegradation category for those parameters to protect "high quality" waters. The board believes that "harmful" is the appropriate nondegradation category for EC and SAR as explained more fully in Response to Comment No. 9.

COMMENT NO. 12: The change in the nondegradation rules would apply to all discharges into the Tongue River, even those that are not CBNG discharges. Thus, all dischargers would be required to obtain an authorization to degrade.

RESPONSE: An authorization to degrade would be necessary only for new or increased discharges to surface water that would exceed the new significance criteria for EC and SAR. Since the "harmful" designation will establish more stringent nondegradation criteria for EC and SAR than the existing rule, it is more likely that any proposal for a new or increased discharge containing EC and SAR in levels above ambient concentrations must obtain an authorization to degrade. The board also notes that this change in the nondegradation criteria is only for EC and SAR, and does not change the nondegradation criteria for any other substance.

COMMENT NO. 13: Changes in the nondegradation criteria would encourage industry to discharge CBNG water to the rivers in the spring, when high quality irrigation water is most needed for salinity management. Thus, water will be impaired in the rivers most of the year.

RESPONSE: The board is adopting the new nonsignificance criteria for EC and SAR in order to protect "high quality" waters (i.e., water that is cleaner than the water quality standards) throughout the year. The board therefore assumes that the department, when imposing the new criteria in discharge permits, will measure "significance" based on actual ambient stream conditions throughout the year. By doing this, the "high quality" waters present during springtime runoff will be protected from changes in water quality that exceed the new criteria.

COMMENT NO. 14: The standard for SAR is more restrictive than is necessary to protect irrigation based on generally accepted scientific literature.

RESPONSE: Since the board is not proposing changes to the water quality standard for SAR, the science supporting the adoption of that standard is outside the scope of this rulemaking. In order to address any perceived inaccuracies in the science supporting the current rule, a new rulemaking would be necessary because the present one does not propose any change to the numeric water quality standards.

The board will take this opportunity to explain, however, that during the hearings leading to the adoption of the EC and SAR standards, the board heard

testimony and expert opinions based on the current literature. Using this information, the board made its decision based upon the principle of "risk management." That is, the board minimized risk to the irrigator's use of water by adopting the more conservative standards within a range of possible choices.

COMMENT NO. 15: Treatment of SAR as "harmful" for the purpose of applying the nondegradation policy would create an extremely complex regulatory process to determine the net effect of CBNG discharged water and effluent from other dischargers on the SAR of the receiving water. The reason for this complexity is that SAR is not a water quality constituent per se, but is a ratio of sodium over the square root of calcium plus magnesium divided by two (concentration in milliequivalents). The indeterminate effect of mixing two waters whose SAR values differ makes the nondegradation rule especially complex because the individual ion concentrations of each water source must be considered, and in some cases, geochemical modeling may be required.

RESPONSE: The board has adopted MPDES permit rules that address multiple dischargers to a stream and assumes that the department will adhere to those rules when issuing permits for discharges of CBNG water and other discharges. The board is also aware that the department has developed and issued MPDES permits that contain limits for SAR to ensure compliance with the existing numeric water quality standard for that parameter. While the board acknowledges that developing permit limits and conducting the supporting analysis is more complex for SAR than some other constituents, the analysis is within the normal range of analysis used by the department for other permits.

COMMENT NO. 16: Changing the nonsignificance criteria for EC and SAR to "harmful" is inconsistent with the approach the board took in 2003.

RESPONSE: The board acknowledges that, in 2003, it determined that EC and SAR should be treated as "narrative" for purposes of determining nonsignificant changes in water quality. Much of the board's reasons for making this determination were premised on the difficulty encountered by the permit-writer in measuring nonsignificant changes during the permit application process. This perceived difficulty in measuring changes was based on the naturally high variability of EC and SAR in the Powder River Basin. The board has reconsidered its earlier finding and has now determined that it is inappropriate to treat EC and SAR differently than other numeric water quality standards based upon regulatory inconvenience for the department.

Moreover, when the board adopted the "narrative" criteria in 2003, some board members voiced concern with this approach. The concern stemmed from a recognition that some waters in the Powder River Basin, such as the Tongue River, were in fact "high quality" waters that required protection under the nondegradation policy. After further discussion, the board passed a two-part motion: the first part moved to adopt the narrative criteria that is now in rule; the second part "direct(ed) the department (to) initiate rulemaking on a different method …." The board believes that the evidence and argument submitted in the current rulemaking supports treating EC and SAR as "harmful" parameters for purposes of nondegradation review.

COMMENT NO. 17: Several commentors suggested that changing the nonsignificance criteria for EC and SAR could unintentionally limit agricultural practices. Since irrigation practices, such as flood irrigation or return flows, may add sodium that would exceed the new criteria, those irrigation techniques could be prohibited or limited.

RESPONSE: In general, the nondegradation policy is applied to all activities that require the department's review and approval, such as point-sources under MPDES permits or waste treatment systems in new subdivisions. Nonpoint source activities, such as agricultural activities, are categorically exempt from the nondegradation policy, provided those activities apply reasonable land, soil, and conservation practices and all beneficial uses are protected. 75-5-317(2)(b), MCA. Due to this categorical exemption, the board does not anticipate that irrigation practices will be required to meet the new criteria as long as those practices protect beneficial uses.

COMMENT NO. 18: Changing the classification of EC and SAR to "harmful" will severely restrict the department's ability to issue water discharge permits based on the assimilative capacity of the receiving waters.

RESPONSE: The board acknowledges that ambient levels of EC and SAR in the Powder River Basin are naturally near or above the "harmful" criteria that requires existing water quality levels to be less than 40% of the standard in order for any change in water quality to be deemed "nonsignificant." This means that changing the status of EC and SAR to "harmful" will most likely require new permittees, who otherwise could discharge to levels allowed by the numeric standards, to apply for an authorization to degrade. Alternatively, those wishing to discharge without obtaining an authorization to degrade must discharge levels of EC and SAR below or at ambient water quality.

COMMENT NO. 19: Any further restrictions on water quality at the border are unnecessary and place an unfair burden on Wyoming to offset water degradation issues that may exist further downstream due to contributions from other sources, including irrigation practices near Miles City.

RESPONSE: The board is adopting the new nonsignificance criteria for EC and SAR in order to protect Montana's "high quality" waters in the Powder River Basin, not to specifically burden discharges originating in Wyoming. In terms of the 12 mile stretch of impaired waters near Miles City, the department will continue to address that issue through its own permitting procedures, nonpoint source program, and TMDL program.

COMMENT NO. 20: The fisheries and aquatic life of the Tongue River cannot withstand EC levels of 1500. Any increase in the levels of EC and SAR can result in significant and measurable changes in the ecological integrity of a water body.

RESPONSE: Since the board is not proposing changes to the water quality standard for EC and SAR, the science supporting the adoption of those standards is outside the scope of this rulemaking. In order to address any perceived

inaccuracies in the science supporting the current rule, a new rulemaking would be necessary because the present one does not propose any change to the numeric water quality standards.

The board notes that the standards adopted for EC and SAR in 2003 were established to protect the most sensitive beneficial use of the waters, which is its use for irrigation. Since the standards are established to protect the most sensitive beneficial use, the board assumes that all other beneficial uses, including aquatic life, are more than adequately protected. The board is unaware of any new information to support a change in the existing standards. The board is aware that there are studies underway in the Tongue River Basin to ensure that the existing standards are adequately protective.

COMMENT NO. 21: The quality of the produced water in the Little Powder River area is better than in the other drainages and it is more likely that water quality and suitability for irrigation has been improved as a result of CBNG discharges.

RESPONSE: The board is not aware of data that supports that water quality in the Little Powder River is better than in the other drainages due to CBNG discharges. Data that is available, however, indicates that water quality in the Little Powder River drainage has not changed in response to CBNG produced water.

COMMENT NO. 22: Numerous commentors indicate that the rules being considered by the board should not be adopted until the water quality effects from CBNG development under the existing rules are proven to be inadequate. Many commentors noted that there is no evidence that CBNG development in Wyoming has had any effect on the quality of water in the Tongue River and therefore the rules are premature. Others noted that the Water Pollution Control Advisory Council adopted a motion advising the board not to go forward with the proposed rules for the same reasons stated above.

RESPONSE: The board agrees in part with the commentors by its decision not to adopt the new rules mandating reinjection and treatment of all CBNG water. The board does not agree, however, that it should not adopt the proposed change that will designate EC and SAR "harmful" for purposes of nonsignificance review. The board has explained previously that the change to "harmful" is consistent with the manner in which the board has addressed all other parameters for which the board has adopted numeric water quality standards.

COMMENT NO. 23: Given the ambient presence of EC and SAR in the Powder River, the Powder River does not qualify as a "high quality" water appropriate for a stringent nondegradation review.

RESPONSE: The existing water quality in the Powder River does exceed the numeric standards for EC and SAR much of the time; the commentor is correct in stating that for EC and SAR the Powder River is not a "high quality" water that is protected under Montana's nondegradation policy.

COMMENT NO. 24: The proposed rules violate 75-5-203, MCA, which prohibits the board from adopting a rule more stringent than comparable federal regulations or guidelines, unless certain written findings are made. The rules are

more stringent than federal regulations because EPA has not promulgated numeric criteria for EC and SAR. Since the board has not made the findings required by 75-5-203, MCA, for the more-stringent rules being considered, the board cannot adopt the proposed rules.

RESPONSE: The board does not agree that the proposed rules are more stringent than comparable federal regulations. The board is not adopting numeric water quality standards for EC and SAR, but rather adopting a rule that will classify those parameters as "harmful." As a result, EC and SAR will now be reviewed under the state's nonsignificance criteria applicable to all harmful parameters. Since there are no comparable federal regulations regarding the use of nonsignificance criteria to implement a state's nondegradation policy, the prohibitions in 75-5-203, MCA, do not apply to the board's adoption of the rule classifying EC and SAR as harmful.

COMMENT NO. 25: Section 1342(b) of the CWA does not authorize EPA to automatically apply Montana's proposed water quality standards in Wyoming. Therefore, the board should not assume EPA will do so. Although EPA has promulgated regulations requiring the imposition of a downstream state's water quality standards in all CWA permits issued by a state or EPA, there is a serious question as to whether EPA has authority to require state permit writers to comply with those regulations. See, 40 CFR 122.4(d) and 122.44(d). The U.S. Supreme Court has upheld EPA's authority to adopt rules requiring EPA-issued permits to comply with the standards of a downstream state under Section 401 of the CWA, but it has not ruled on the validity of the rules as applied to state-issued permits. See, Arkansas v. Oklahoma, 503 U.S. 91, 106 (1992). Since the U.S. Supreme Court has made clear that a downstream state takes a "subordinate position" to the upstream permitting state under the CWA, the validity of the rule as applied to state permits is questionable. Int'l Paper Co. v. Ouellette, 479 U.S. 481, 490-491(1987).

RESPONSE: The board understands that it cannot assume that EPA will "automatically" impose Montana's revised nondegradation criteria in Wyoming permits. However, the board does not agree that EPA's regulations requiring compliance with a downstream state's water quality standards are not applicable to permits issued by Wyoming. Contrary to the commentor's assertion, the Court's reasons for upholding the regulations were not limited to federal permits under Section 401, but rather on the purposes of the Act in Section 101 and the water quality-based effluent requirements in Section 301(b)(1)(c). Together, those provisions expressly identify the achievement of state water quality standards in a system of nationwide NPDES permits as one of the Act's central objectives. Arkansas, supra, at 105-106. The court further explained that, although a downstream state's direct participation in the permitting process of an upstream state is limited, those limits "… do not in any way constrain the EPA's authority to require … compl[iance] with downstream water quality standards." Id. at 106. For the reasons given above, the board is confident that EPA's regulation is valid and that EPA will adhere to its own regulations for purposes of imposing Montana's revised nondegradation standards in Wyoming permits.

COMMENT NO. 26: A rule that requires EPA to automatically apply Montana's standards to Wyoming is also contrary to the policy of Section 101(b) of

the CWA to "… recognize and preserve, and protect the primary responsibilities of the States to prevent, reduce and eliminate pollution, [and] to plan the development and use … of land and water resources …." 33 U.S.C. 1251(a). The rule is also contrary to Section 510 of the CWA, which allows states to adopt more stringent standards within their borders, but does not authorize states to enforce those more stringent standards on upstream states. Given the intrusiveness of the application of one state's water quality standards to another state's issuance of a permit, a court would give little deference to EPA's claim of authority to impose Montana's standards in Wyoming.

RESPONSE: The board does not agree. Provisions in the CWA that preserve a state's authority over its waters and lands such as Section 101(b) and Section 510 of the Act "… only concern state authority and do not constrain the EPA's authority to promulgate reasonable regulations requiring point sources in one state to comply with water quality standards in downstream States." Arkansas, supra, at 107. Given the U.S. Supreme Court's pronouncement in Arkansas rejecting the argument that Section 510 precluded compliance with an adjacent state's standards, a court will likely uphold EPA's regulation as a valid exercise of its authority.

COMMENT NO. 27: The proposed rule changing the nonsignificance criteria of EC and SAR to "harmful" violates the "negative" aspect of the commerce clause, which directly limits the power of states to discriminate against interstate commerce. Wyoming v. Oklahoma, 502 U.S. 437, 454 (1992). According to the U.S. Supreme Court, "This 'negative' aspect of the Commerce Clause prohibits economic protectionism - that is, regulatory measures designed to benefit in-state economic interests by burdening out-of-state competitors." New Energy Co. of Indiana v. Limbach, 486 U.S. 269, 273 (1988). If Wyoming is prohibited under the rule from renewing or issuing new discharge permits in the Tongue, Powder, and Little Powder River watersheds, CBNG production in Wyoming will be curtailed and the impact on interstate commerce will be severe. The proposed rule discriminates against out-of-state developers since Wyoming discharges cannot obtain the relief available to discharges in Montana, i.e., obtaining an authorization to degrade. Due to its discriminatory purpose and effect, the proposed rule violates the commerce clause of the federal constitution.

Moreover, any suggestion that Section 510 of the CWA allows Montana to discriminate against the Wyoming CBNG industry would be unavailing. Although Congress can insulate a state's regulations from the "negative" aspect of the Commerce Clause, Congress must make its intent to do so "manifest" and "unambiguous." Wyoming, supra. Since Section 510 merely saves state standards from preemption, Congress has not manifested its intent to protect Montana's standards from strict scrutiny under the Commerce Clause.

RESPONSE: Neither the Montana statutes nor rules prohibit the application for or issuance of an authorization to degrade to a Wyoming discharger. Furthermore, even if it is assumed that a Wyoming discharger could not obtain an authorization to degrade, the board does not agree that the proposed nonsignificance criteria for EC and SAR is subject to the "negative" aspect of the Commerce Clause, because the CWA provides federal status to state standards in

the context of interstate disputes. Arkansas v. Oklahoma, 503 U.S. 91, 111 (1991). 40 CFR 131.12 requires states to adopt antidegradation policies. The federal character of state water quality standards is based upon the state and federal "partnership" created by the CWA, which promotes the "common goal" of cleaning up the nation's waters. See e.g., New York v. United States, 505 U.S. 144, 167 (1992). As explained in New York, the CWA is an instance where Congress, acting under its authority to regulate activities affecting interstate commerce, has offered the states the choice of regulating those same activities using federal standards in a spirit of "cooperative federalism." Id. By accepting Congress' offer to regulate activities under the CWA, states agree to issue discharge permits according to federal requirements and to adopt and enforce water quality standards that are subject to EPA's approval.

In the context of interstate pollution, the U.S. Supreme Court has found that EPA's determination of which state standards are "applicable" in another state's permit to be a matter of federal law. Arkansas, 503 U.S. at 111. The court reached its conclusion based upon two findings. First, the fact that interstate pollution had long been controlled by federal common law led the court to conclude that EPA's regulation, requiring all NPDES permits to comply with "applicable water quality requirements of all affected states" to have effectively incorporated into federal law any state standard that EPA determined to be applicable to an upstream state. Id. As explained by the court - "Recognizing that the system of federally approved state standards as applied in the interstate context constitutes federal law is wholly consistent with this principle (i.e., the long history of federal control over interstate pollution)." Id. Second, the court found that "treating state standards in interstate controversies as federal law accords with the Act's purpose of authorizing the EPA to create and manage a uniform system of interstate water pollution regulation." Id.

Applying those principles here, the board believes that the nonsignificance criteria for EC and SAR, if approved and determined by EPA to be "applicable" to Wyoming, will become a matter of federal law governing interstate commerce. As such, the board's adoption of the rule does not violate the "negative" aspect of the commerce clause.

REINJECTION

COMMENT NO. 28: The proposed rule requiring reinjection invades the authority of the Board of Oil and Gas Conservation (BOGC) because 82-11-111(2)(a), MCA, grants that agency the authority to regulate "the disposal or injection of water" from oil and gas activities.

RESPONSE: The statute cited above does not vest the BOGC with exclusive authority to regulate reinjection, but rather requires the BOGC to impose "measures" that will prevent damage to the land or subsurface caused by oil and gas development, including measures that regulate the "injection of water and disposal of oil field wastes." The board does not believe that any authority it has under 75-5-305, MCA, to require reinjection as treatment for the disposal of CBNG wastewater intrudes upon the BOGC's authority to require the same.

COMMENT NO. 29: The Department of Natural Resources and Conservation (DNRC), not the board, has been delegated the authority to regulate water quantity. Since the purpose of reinjection is to conserve water in the aquifers and to protect wells and springs from aquifer depletion, the board has no authority to adopt a rule imposing reinjection for the purpose of regulating water quantity.

RESPONSE: Under Montana's Water Quality Act (WQA), the board is authorized to adopt rules for the treatment of waste in order to protect water quality, not water quantity. Since the Legislature has expressly granted to DNRC the authority and responsibility to protect ground water from excessive withdrawals and to prevent the "waste" of ground water pursuant to 85-2-506 through 85-2-507, MCA, the board agrees that it has not been granted the same authority under the WQA. Consequently, the board has no authority to adopt a rule requiring reinjection if the sole purpose of the rule is to conserve water quantity. Since the board is declining to adopt the reinjection rule, its authority to do so is a moot issue. See Responses to Comment Nos. 38 and 39.

COMMENT NO. 30: The board has no authority to impose reinjection as a means to protect water rights from harm caused by CBNG development when a statute administered by BOGC addresses the same issue. Specifically, under 82-11-175(3), MCA, a developer must offer a "mitigation agreement" to any person whose water right may be affected by CBNG development. Since the BOGC has been delegated authority to administer the statute, the board has no authority to adopt a rule that interferes with or conflicts with the BOGC's authority.

RESPONSE: The board's authority to impose reinjection as a treatment requirement for CBNG wastewater is independent from the BOGC's authority to require mitigation agreements for water rights that may be affected by CBNG development. Therefore, the board is not prohibited from requiring reinjection under the theory that it interferes with BOGC's authority. Since the board has determined not to adopt the requirement for reinjection, the issue of the board's authority to do so is moot. See Responses to Comment Nos. 38 and 39.

COMMENT NO. 31: The requirement to reinject conflicts with 75-5-305, MCA, which has been cited as authority for the board to adopt the requirement. Reinjection, however, is not a "treatment of wastes," as contemplated by the statute, but is instead a "waste" of good water itself. Since reinjection precludes the waters' use for stock watering, managed irrigation, dust suppression, and other beneficial uses, the requirement to reinject must be considered a "waste" of good water.

RESPONSE: Although the short-term effect of reinjection would preclude the use of CBNG water for beneficial uses, the theory behind the rules is that the reinjected water will be conserved for future acquisition and use. As such, the requirement to reinject does not result in a "waste" of good water. Moreover, the U.S. Environmental Protection Agency (EPA) has recognized the wide use of reinjection by coastal oil and gas developers to justify a "zero discharge" limit upon those facilities even though EPA did not mandate reinjection as the sole method of treatment. Texas Oil & Gas Ass'n v. EPA, 161 F.3d 923, 931 (5th Cir. 1998). Accordingly, the board, like EPA, considers reinjection to be a valid method of treatment for water produced during oil and gas development.

COMMENT NO. 32: The proposed rules requiring reinjection conflict with the legislative mandate in 82-11-175(2), MCA, which expressly states that water produced from CBNG wells must be managed in any of the following ways: (1) used for beneficial purposes; (2) reinjected; (3) discharged to surface waters under an MPDES permit; or (4) managed through "other methods allowed by law." Since the plain language of the statute allows CBNG water to be managed in any of the four ways described above, a rule that limits those options is beyond the board's authority for two reasons: (1) a rule cannot enlarge, modify or contravene the provisions of statute; and (2) an agency cannot adopt a rule apart from that power which has been granted to it by the legislature.

RESPONSE: The authority of the BOGC to administer the requirements in 82-11-175(2), MCA, is independent of the board's authority to adopt treatment requirements under the WQA. Since the board's authority to adopt treatment requirements is based upon 75-5-305, MCA, and not upon 82-11-175, MCA, the argument that the board would exceed its authority and promulgate a rule contrary to its authorizing statute has no merit.

COMMENT NO. 33: The proposed rules violate 75-5-203, MCA, which prohibits the board from adopting a rule more stringent than comparable federal regulations or guidelines, unless certain written findings are made. The rules are more stringent than federal regulations because EPA's effluent limitation guidelines (ELG) for oil and gas facilities allow produced water to be used for beneficial purposes. Since the board has not made the findings required by 75-5-203, MCA, for the more-stringent rules being considered, the board cannot adopt the proposed rules.

RESPONSE: The board does not agree that the proposed rules are more stringent than comparable federal regulations. The ELG adopted by EPA for oil and gas development west of the 98th meridian, which requires produced water be put to a beneficial use (40 CFR 435.50), does not apply to CBNG facilities. See EPA draft interagency report, at pages 1-3, 1-4, entitled "Guidance for Developing Technology-based Limits for Coal bed Methane Operations: Economic Analysis of the Powder River Basin." Since EPA has not adopted a regulation specifying treatment technologies for CBNG facilities, there is no comparable federal regulation or guideline that would trigger the prohibition in 75-5-203, MCA, regarding the adoption of rules requiring reinjection or treatment of CBNG wastewater.

COMMENT NO. 34: The rule prescribing reinjection as the only method of treatment exceeds the board’s authority to adopt treatment requirements in the event EPA has failed to do so. See, 75-5-305, MCA. Under the CWA, EPA may not mandate a particular treatment for purposes of meeting the effluent limitations adopted by the agency.

RESPONSE: The board agrees that the CWA prohibits EPA from specifying a particular method of treatment when it promulgates technology-based effluent limitations. See e.g., Riverkeeper Inc. v. EPA, 358 F.3d 174, 185 (2nd Cir. 2004). According to Riverkeeper, rather than prescribe a specific method of treatment, EPA "… must promulgate precise effluent limitations … for example, 40 milligrams of

suspended solids per liter, or 30,000 parts per million of toxic pollutants" and leave the preferred method of meeting the limitations to the discretion of each facility. Id. at 185, 188. Since the board is declining to adopt the rules requiring reinjection, the question of the board's authority to mandate a particular treatment under the WQA is a moot issue. See Responses to Comment Nos. 38 and 39.

COMMENT NO. 35: The board should use the factors given by the U.S. Supreme Court in Daubert v. Merrell Dow Pharmaceutical, Inc., 509 U.S. 579 (1993), which the Montana Supreme Court has adopted in State v. Moore (1994), 268 Mont. 20, for purposes of evaluating scientific and technical opinions given in support of the proposal for reinjection. The factors in Daubert, as applied to the expert testimony offered by the petitioners, argue strongly that the testimony and report of James Kuipers should not be given significant weight by the board.

RESPONSE: In an administrative rulemaking under the Montana Administrative Procedure Act, the rules of civil procedure, and rules of evidence used by courts do not apply. For this reason, the board declines to use the factors given in Daubert as a means to weigh evidence or the credibility of a witness during this rulemaking proceeding. Since the board has determined that it will not adopt the reinjection requirement, the credibility of the testimony given in support of the rule is a moot question. See Responses to Comment Nos. 38 and 39.

COMMENT NO. 36: The proposed rules violate the federal regulation requiring states to follow established legal procedures when adopting or revising water quality standards. 40 CFR 131.5(a)(3). Since the legislature has established a variety of permissible ways to manage CBNG produced water pursuant to 82-11-175, MCA, the rule restricting the options to only one way, i.e., reinjection, conflicts with the legislative mandate in 82-11-175, MCA, and is therefore an invalid exercise of the board's authority. Accordingly, EPA cannot reasonably conclude that the board followed state legal procedures when adopting the rule, which is a prerequisite for EPA approval.

RESPONSE: As explained in Response to Comment No. 32, the authority of the board to adopt treatment requirements for the disposal of wastes under 75-5-305, MCA, is independent of the authority of the BOGC to administer the requirements of 82-11-175(2), MCA. Since the board proposed the requirement to reinject pursuant to 75-5-305, MCA, the rule does not conflict with the board's statutory authority to adopt treatment requirements for the disposal of wastes. Accordingly, the rule was proposed for adoption according to state law and legal procedures.

COMMENT NO. 37: Section 75-5-305, MCA, requires that, before the board may establish minimum technology-based treatment requirements, the board must ensure that the requirements are "cost effective and economically, environmentally, and technologically feasible." This provision requires that the board produce sound scientific data to support its determinations that a proposed rule is either environmentally necessary or technologically feasible.

RESPONSE: The board agrees that, prior to adopting a rule imposing minimum treatment requirements, the board must produce scientific data

demonstrating the economic, environmental, and technological feasibility of the treatment requirements. The board does not agree, however, that the statute also requires data demonstrating that the rule is necessary to protect the environment. Since the board has determined that it will not adopt the rules requiring reinjection or treatment, the scientific data required by 75-5-305, MCA, in support of those rules is not necessary.

COMMENT NO. 38: The board has ample authority under Montana's Water Quality Act and the federal CWA to adopt technology-based treatment requirements for the CBNG industry. The board's authority to adopt minimum treatment requirements under 75-5-305(1), MCA, mimics the Clean Water Act's provisions for technology-based treatment requirements and specifically authorizes the board to adopt such requirements when the federal government fails to do so. Since EPA has failed to adopt technology-based standards for the CBNG industry, the board should fill the gap for EPA and adopt the proposed treatment requirements. These requirements are consistent with EPA's rules for establishing best available technology (BAT). By adopting the rules, the board will promote the goal of the CWA, which is to achieve "zero discharge."

Other commentors opposing the rules contend that the technological feasibility of reinjection for CBNG producers in Montana has not been demonstrated as required by the CWA.

RESPONSE: The board agrees with the proponents that it has authority to adopt technology-based treatment requirements in the absence of federally promulgated requirements. The board also acknowledges that its authority to adopt minimum treatment requirements for an industry under 75-5-305, MCA, is closely tied to EPA's procedures for adopting technology-based effluent limits. Similar to EPA, the board must ensure that the requirements are "cost effective and economically, environmentally, and technologically feasible" for a particular industry.

The board also agrees, however, with the opponents' comments stating that the requirement to reinject is contrary to the CWA. Cases construing the CWA have found that the effluent limitations envisioned by Congress were intended to maximize equity among discharges by establishing uniform standards for each industry. E.I. du Pont de Nemours v. Train, 430 U.S. 112, 129 (1977). In order to promote the goal of uniformity, the technology-based standards promulgated by EPA are to focus on the industry as a whole and are not to be applied on a case-by-case basis. See e.g., Natural Res. Def. Council v. EPA, 859 F.2d 156, 200 (D.C. Cir. 1988) (the effluent limits would "assure that similar point sources with similar characteristics ... meet similar effluent limits."); United States Steel Corp. v. Train, 556 F.2d 822, 844 (7th Cir. 1977) (technology-based effluent limitations and guidelines establish "uniform standards and are not to vary from plant to plant."). Consequently, once EPA promulgates technology-based effluent limits for an industry, permit writers may not impose different treatment standards on a case-by-case basis. Nat. Res. Def. Council, supra, at 200.

Rather than demonstrate that reinjection is feasible for the CBNG industry in Montana, petitioners have conceded that reinjection will not be feasible in some, perhaps many, instances. The rules reflect this concession. Although New Rule I unequivocally requires reinjection of all CBM wastewater, the requirement is

prefaced with an exemption that equally applies to all CBM wastewater whenever site-specific evidence demonstrates that the requirement is not feasible. Since the rules do not establish reinjection as a "uniform" standard for the entire CBNG industry in Montana, the rules conflict with the CWA's goal of uniformity and are not supported by the board's authority to adopt treatment requirements for a particular industry pursuant to 75-5-305, MCA. Therefore, the board has determined that it will not adopt the new rules requiring reinjection of CBM wastewater.

COMMENT NO. 39: Several comments were received stating that the requirement to achieve "zero discharge" through reinjection is both impossible and unreasonable. Comments from Wyoming clarified that, despite various attempts, only three percent of produced CBNG water in Wyoming has been successfully reinjected. Others provided detailed reports explaining why each injection site is geologically specific and further explaining that reinjection sites in the Montana Powder River Basin are very limited. These reports indicated that the sites that are available for reinjection in Montana may not be viable due to a number of factors. A primary concern is that the lateral discontinuity of the Fort Union sands makes it difficult to predict or map potential reinjection sites. Moreover, much of the sands in that formation are typically saturated thereby severely limiting the amount of available pore space to store reinjected water. In some cases, injecting produced water into the coal seams from which it is taken will reverse the pressure reduction that allows the gas to move, thereby reducing or halting the production of CBNG. Further, if a site for injection is found, its serviceable life depends upon its geologic properties and hydrologic conditions, including the amount of water already present and the likelihood of fracturing under the pressures used to reinject. These commentors concluded that, due to the studies indicating that reinjection is not technically feasible or reasonable in most instances, the board has not met the requirement to prove technological feasibility for requiring this technology in all cases, pursuant to 75-5-305, MCA.

RESPONSE: The board agrees that the technical feasibility of reinjection has not been proven as a treatment requirement for the entire CBNG industry in Montana. For this reason, the board has determined that it will not adopt the treatment requirement of "zero discharge."

COMMENT NO. 40: Proving that reinjection is not technically feasible with "clear and convincing evidence" is a standard too high to prove. There is so much uncertainty in the geological and hydrological systems in the Powder River Basin in Montana that the data to prove the standard may be unobtainable for many sites and prohibitively expensive for other sites.

RESPONSE: Since the board has determined that it will not adopt reinjection as a treatment requirement, it follows that the board is also not adopting the waiver provision requiring "clear and convincing evidence."

COMMENT NO. 41: Several commentors raised concerns over the environmental impacts that will result from the rule requiring mandatory reinjection for all CBNG produced water in the region. In many cases, in order to accommodate the amount of produced water from a single CBNG well, a producer may need to drill

two or more reinjection wells to achieve the required "zero discharge." Consequently, mandatory reinjection will result in more than doubling the number of wells drilled in the Powder River basin. In addition, the number of roads, drill pads, pipe installations, and other disturbances will necessarily increase to accommodate reinjection. These surface impacts have not been considered by the board.

In terms of subsurface impacts, reinjection will cause impacts to aquifers if undesirable mixing of aquifers occurs or if there is subsurface fracturing caused by pressures used to reinject. These subsurface impacts are difficult to predict or measure and have not been considered by the board.

Finally, the suggestion that sequential completion of wells should be used is problematic from both a practical and an environmental perspective. First, to produce the first zone, an injection horizon would be needed, but with no depleted zones there is no place to put the water. Thus the sequential scheme fails because there is no starting point. Second, sequential completion of wells would also extend the length of time that the land is disturbed, which results in more harm to the environment as well as to the surface owner.

RESPONSE: The board agrees that the full environmental impacts of reinjection have not been analyzed and, in fact, may not be fully predictable. The board also acknowledges that there appears to be a lack of specific geologic and hydrologic information available to model the likelihood of impacts to the aquifers. Since the board has determined that it will not adopt the requirement to reinject due to its technical infeasibility for the entire industry, the lack of analyzing environmental impacts of the technology is a moot issue.

COMMENT NO. 42: Several comments were received describing the economic difficulties encountered in reinjecting CBNG development produced water in the region. Detailed reports and calculations were provided indicating that it was not economically feasible to locate, install, and operate the number and types of injection wells that would be required due to this rulemaking. According to these commentors, reinjection should not be required, but allowed as an option.

RESPONSE: The board agrees. The board did not have the level of detail available to industry and others for this analysis and the full economic analysis of this option has not been undertaken with the data submitted.

COMMENT NO. 43: Several commentors stated that, by mandating reinjection and treatment, the rules preclude opportunities for other beneficial uses and innovative technologies. According to these commentors, the rules limit the availability of new treatment techniques and deprive the landowners of water for stock watering and managed irrigation. Operators want and need options for water management and land owners need the water for its beneficial uses. Moreover, if shallow injection sites are not found, deep injection may be necessary and the water would be lost to any future beneficial use. For these reasons, reinjection and treatment should not be required, but allowed as an option.

RESPONSE: Since the board has determined that it will not adopt the rules requiring reinjection and treatment, the board is not precluding the use of CBNG water for beneficial uses.

COMMENT NO. 44: This petition would require establishing an additional regulatory program for the department.

RESPONSE: The board acknowledges that reviewing data demonstrating that reinjection is not feasible under a standard of "clear and convincing" evidence would be costly and time-consuming for department staff. The department has estimated that, at a minimum, one new employee with expertise in this area would be required.

COMMENT NO. 45: One commentor indicated that reinjection is not necessary to protect private water supplies from being depleted because there are published studies showing that there is a lack of vertical communication between shallow aquifers and the deeper coal beds. Most farm and ranch wells are less than 300 feet deep, while CBNG wells are greater than 300 feet deep. Another commentor indicated that ground water monitoring shows that actual drawdown is much less than that forecast by models.

In addition, there are other regulatory programs in place to protect private water supplies from CBNG development. These programs include DNRC's controlled ground water area, which requires water source mitigation agreements within one mile of CBNG development as well as monitoring ground water levels. In addition, BLM and the BOGC conduct NEPA/MEPA review of a CBNG developer's plan of development. In that process the agencies assess the extent of drawdown and impose mitigation measure. In addition, Class V UIC permits issued by EPA for reinjecting produced CBNG water also take into consideration the effect of Class V wells on drinking supplies.

RESPONSE: The board acknowledges that there are regulatory programs in place to protect private water supplies.

COMMENT NO. 46: One commentor is concerned that ground water supplies may be depleted if CBM developers are permitted to "waste" produced water from their wells without reinjection. The result would be that private water wells will run dry and property values will decrease.

RESPONSE: See Response to Comment No. 45.

COMMENT NO. 47: One commentor indicates that the proposed new rules should be strengthened to include provisions to ensure that injected water is of better quality than water in the receiving aquifer and that stock water ponds containing CBNG water should be lined.

RESPONSE: The requirement to reinject water of better quality than the receiving aquifer has not been proposed and is arguably outside the scope of this rulemaking. In addition, since the rules, if adopted, would preclude the disposal of CBNG water into any impoundments, the suggested requirement to line CBNG holding ponds is not relevant here. More importantly, any requirement to line ponds for the disposal of CBNG produced water is beyond the board's authority to adopt technology-based effluent limits under 75-5-305, MCA.

COMMENT NO. 48: Several commentors supported reinjection and treatment because those requirements would prevent the storage of CBNG

produced water in ponds. These commentors were concerned that the impounded water would cause damage to soils and to adjacent streams. Other commentors opposed reinjection as the sole method of disposal because infiltration ponds containing CBNG water recharge depleted aquifers and allow the immediate beneficial use of the impounded water for cattle and wildlife.

RESPONSE: The board has no authority under the Water Quality Act to specifically prohibit or require the use of ponds or impoundments for the storage of CBNG water. Although the adoption of rules requiring reinjection and treatment would effectively preclude the use of storage ponds, the board is declining to adopt those requirements as explained previously in these responses. Consequently, the board is neither prohibiting nor promoting the use of storage ponds in this rulemaking.

COMMENT NO. 49: The federal Clean Water Act (CWA) requires that, when standards are revised, certain considerations must be given, such as "their use for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes." 33 U.S.C. 1313(c). The proposed rules for reinjection and treatment fail to take into consideration both the potential agricultural and industrial uses of the produced water.

RESPONSE: The comment references Section 303(c) of the CWA, which governs the states' adoption of water quality standards for the protection of the nation's waters. That provision of the CWA does not apply here, since the proposed treatment requirements are not being adopted for the purposes of establishing and protecting the beneficial uses of Montana's waters. Rather, the board proposed technology-based treatment requirements which, as the name suggests, are based upon technology rather than water quality. Under 75-5-305, MCA, the board may adopt minimum treatment requirements so long as the requirements are "cost-effective and economically, environmentally, and technologically feasible." Accordingly, the board need not consider the designated uses of Montana's water ways or the potential uses of CBNG wastewater when adopting treatment requirements under 75-5-305, MCA.

COMMENT NO. 50: Several commentors stated that the adoption of the rules would diminish property values and private rights. These commentors do not want to be limited in their use of CBNG water for its use in stock tanks only. Landowners want to be able to work directly with CBNG developers to determine how to manage CBNG water produced on their land. Therefore, they request the board not to adopt rules limiting their options.

RESPONSE: Since the board has determined that it will not adopt the new rules mandating reinjection and treatment as the sole method of disposal, the board has also determined that it will not adopt the new rule providing a narrow exemption from those two methods of disposal - that is, the exemption for CBNG water put into stock watering tanks. The board is declining to adopt the exemption for stock water tanks because an exemption from rules that do not exist is meaningless.

TECHNOLOGY-BASED EFFLUENT LIMITS

COMMENT NO. 51: Several commentors stated that the board should not assume that reverse osmosis (RO) and ion exchange (IX) are proven systems that can easily be used as "off-the-shelf" systems for CBNG produced water. Unlike conventional RO systems that operate at relatively low recovery rates for treating drinking water, high recovery systems are required for treating CBNG water. For example, most "off-the-shelf" RO systems are used for treating "clean" groundwater and city water supply sources. Thus, conventional RO systems typically operate at 75% recovery or less. Those recovery rates are inadequate for treating CBNG water. In order to minimize the brine that will require disposal, the recovery rate of RO and IX for the treatment of CBNG water must exceed 95% removal. At these higher recovery rates, "off-the-shelf" systems are simply not available. Moreover, designing an RO system capable of operating at high recoveries is very difficult and would require extensive pretreatment to minimize membrane fouling. Consequently, a significant amount of design and testing would be necessary prior to developing a system that could provide the recovery requirements for treating CBNG water.

RESPONSE: The board acknowledges that the evidence indicating that RO and IX are proven "off-the-shelf" technologies for treating CBNG water is incluclusive. IX treatment systems are currently being used at sites in both Wyoming and Montana and RO systems are in use in Wyoming to meet applicable permit limits. However, the record is inconclusive as to the guaranteed success of these treatment systems when applied industry-wide and in all types of conditions. None of these systems are treating CBNG water to the standards outlined in the proposed rule. Since the evidence is inconclusive as to whether or not RO and IX are technologically feasible for treating all CBNG produced water at the level necessary to achieve some of the proposed effluent limits in New Rule VIII, as required by 75-5-305, MCA, the board is declining to adopt the proposed effluent limits.

COMMENT NO. 52: The effluent limits proposed in New Rule VIII are not achievable using current water treatment technologies. In order to reliably and consistently achieve the proposed limits using IX or RO, two treatment trains operating in series (essentially doubling the level of treatment discussed in the petition) would be required.

For example, the most widely used treatment technology in the region today, IX, does not produce water quality that would meet the effluent standards in the proposed rules. In order to meet these effluent standards, additional treatment steps would be required, including a second treatment chain containing an anion exchange resin and associated chemical feed equipment. Even then, this additional stage of treatment would not guarantee compliance with the effluent limits without testing. The second stage of treatment would also produce additional brine requiring disposal. The capital and operating costs of this expanded treatment system has not been considered in the economic analysis for these rules.

RESPONSE: The board acknowledges that the data and reports submitted in support of the rules are inconclusive in establishing the technical feasibility of RO and IX with respect to meeting some of the proposed effluent limits. The board further agrees that the data did not include an analysis of a second phase of treatment and associated economic analysis. Given the inconclusive data

supporting the technical and economic feasibility of some of the treatment requirements in New Rule VIII, the board is declining to adopt the rule.

COMMENT NO. 53: The technologies identified for use to meet the proposed effluent limits, RO and IX, have not been thoroughly evaluated for their performance in the region. In particular, RO has very limited use in the Powder River Basin. The one RO system known to be operating in the Powder River Basin is experiencing significant fouling from biological and colloidal constituents present in CBNG produced water and may soon be shut down due to these problems. According to one commentor, there are very few RO systems used to treat any industrial wastewater due to the potential for membrane fouling. Instead, most RO systems are used to treat relatively clean water sources such as a city water supply or "clean" ground water sources.

RESPONSE: Given the inconclusive evidence on the technical and economic feasibility of RO and IX for treating to the level required by some of the proposed effluent limits, the board is declining to adopt the proposed treatment as stated in Responses to Comment Nos. 50, 51, and 55.

COMMENT NO. 54: Treatment to an SAR of 0.5 and an EC of 233 µmhos/cm may produce an effluent that, when added to streams and rivers, will create water quality conditions that are inappropriate for irrigation use and will also result in the aggressive releasing of metals from the streambed. As a result, the effluent discharged into the rivers could negatively affect both aquatic species and irrigation.

RESPONSE: The argument that treated water under the rules will have an adverse impact on irrigation and aquatic life has not been demonstrated by data presented during the rulemaking. Whether or not the treated water would have adverse impacts to rivers is an issue that would need to be evaluated prior to adopting any treatment requirements according to 75-5-305, MCA. Since the board is declining to adopt the new rules imposing treatment, the issue does not need to be resolved in this rulemaking.

COMMENT NO. 55: The treatment requirements in some cases are actually below detection limits of current technology.

RESPONSE: The board is aware that some of the proposed effluent limits are below the detection limits of current technology. However, this is not a unique situation in terms of water quality regulations. For example, some of the numeric water quality standards adopted by the board are similarly below currently available detection limits.

COMMENT NO. 56: No data has been presented to support the cost estimates for meeting the proposed new standards. Instead, all cost estimates presented to the board, including a draft EPA report, Kuipers' report, and the CDM/PAW report, are hypothetical and based on meeting a particular recovery with absolutely no analysis of meeting the proposed discharge limits. Since the cost of treatment increases with more stringent discharge limits, meaningful and accurate

cost estimates can only be made when the proposed discharge limits are taken into account.

Commentors also pointed out that the economic report prepared in support of the rules contains numerous omissions and errors, which resulted in under-estimating the costs of treatment by a factor of 6.4 (i.e., 640%). They also point out that the errors in the report are made worse given the fact that the report fails to acknowledge the costs associated with doubling the level of treatment that would be necessary to meet the proposed effluent limits. They conclude that the economics of treatment necessary to meet the proposed new standards have yet to be determined. In order to produce a realistic cost estimate, an analysis must be prepared that is site-specific and considers such factors as the quality of the produced water, the proposed discharge limits, site location, and brine disposal costs.

RESPONSE: In order to adopt the proposed technology-based discharge limits, the board must find that the proposed treatment is both cost-effective and economically feasible. 75-5-305, MCA. The board agrees that the record is inconclusive in demonstrating that the treatment necessary to meet all of the proposed discharge limits is cost effective or economically feasible.

COMMENT NO. 57: Several commentors point out that the treatment technologies identified in this rulemaking have environmental and public safety impacts that have not been analyzed. For example, one typical treatment system operating at 90% recovery would generate approximately 63 truck loads of brine each week. The environmental impacts associated with hauling the brine, such as dust, noise, and road disturbance, would need to be considered throughout the basin.

In addition, all RO and IX systems require acid chemicals for treatment of produced water. Consequently, if treatment is required basin-wide, the environmental and safety issues associated with hauling chemicals on public roads needs to be considered by the board prior to adopting the rules.

RESPONSE: The board agrees that the environmental and public safety impacts associated with the proposed treatment requirements would need to be analyzed if those requirements were adopted by the board. See 75-5-305, MCA. Since the board is declining to adopt those requirements, an analysis of the environmental and safety impacts of the requirements is not necessary.

COMMENT NO. 58: Several commentors supported the proposed rule by stating that the proposed technology-based limits would greatly reduce the impacts from SAR and EC resulting from coal bed methane development in Montana. They also stated that establishing technology-based effluent limitations on a statewide basis will speed up the MPDES permitting process and reduce the delays that the methane industry is currently experiencing in obtaining MPDES permits.

RESPONSE: The board does not agree that the adoption of the proposed technology-based effluent limitations will "speed up" the permitting process. The proposed effluent limit of "zero discharge" must be met by all CBNG produced water unless a waiver is obtained. Given the complex technical issues associated with obtaining a waiver from the "zero discharge" limitation, it is clear that the rules do

nothing to shorten the time frame for obtaining a MPDES permit where one is required by the rules, but would lengthen the process instead.

COMMENT NO. 59: Several commentors opposed the rulemaking stating that the technology based effluent limits are unnecessarily low. The effluent limits would result in treatment that would clean up discharges to levels substantially below ambient in-stream water quality and substantially below the levels necessary to achieve the existing water quality standards and nondegradation criteria.

RESPONSE: The board agrees the effluent limits in New Rule VIII are set at levels that are below ambient in-stream concentrations and well below the levels necessary to achieve existing water quality standards and nondegradation criteria. The board notes, however, that since technology-based limits are derived from the best available technology, it is not unusual that such limits are more stringent than necessary to meet applicable water quality standards.

COMMENT NO. 60: Several commentors stated that the proposed effluent limits of EC and SAR are significantly more stringent than Montana's water quality standards and well below the existing concentration of those parameters in the waters of the Powder River Basin. Consequently, they object to the proposed effluent limits by arguing that CBNG producers would be affirmatively required to improve the quality of Montana's streams so that the water could then be degraded by downstream irrigation and other uses.

RESPONSE: The fact that nonpoint sources, such as irrigation practices, are not directly regulated by the federal CWA or the Montana Water Quality Act is not a reason for the board not to adopt treatment requirements for point sources.

COMMENT NO. 61: Although the proposed treatment requirements in New Rule VIII are set forth as "minimum" requirements, the requirements are most likely intended to be maximum limits, not minimum limits. For several parameters, the average concentrations must be kept within a range (e.g., the calcium average concentration must be between 0.1 mg/L and 0.2 mg/L). There is no apparent reason to set a "minimum" standard as a range, nor is there any reason to limit concentrations in a range. Under this provision, a calcium average of either 0.08 mg/L or 0.3 mg/L is out of compliance.

RESPONSE: The board agrees that the rule is not clear and, if adopted, would require clarification. Since the board is not adopting the rule, no change to the rule is necessary.

COMMENT NO. 62: Applying the treatment based effluent limitations to the mathematical calculations for SAR will result in a range from 2.52 to 5.35. The upper range of this limitation is higher than the allowable average for SAR in the existing numeric standards for the Tongue River and Rosebud Creek at any given time (3.0 to 5.0). It is also higher than the allowable maximum numeric standard for SAR of 4.5 in the Tongue River and Rosebud Creek during the irrigation season (Mar. 2-Oct. 31). It is also higher than the proposed instantaneous discharge SAR of 0.5.

RESPONSE: The board acknowledges that there are unresolved issues with the proposed effluent limitations in New Rule VIII. The issue identified by this comment is another reason for not adopting the proposed rule.

COMMENT NO. 63: The proposed arsenic treatment standard of less than 0.0001 mg/L is 100 times lower than the current standard of 0.010 mg/L for drinking water and over 1000 times lower than required for ecologic impacts. The proposed arsenic limit cannot be detected by current monitoring technology, and is lower than current treatment performance by a factor of 10.

RESPONSE: The board acknowledges that the arsenic standard in the rule is well below the state's human health standard for arsenic of 0.010 mg/L, and may be at levels that cannot be detected or achieved using current treatment technologies. Since the board is not adopting the arsenic treatment standard in New Rule VIII, no change will be made in response to concerns raised in this comment.

COMMENT NO. 64: There are inconsistent treatment limits for various parameters within New Rule VIII. The two major inconsistencies are the limits for EC and SAR. EC is based on the ionic concentrations of salt, such as the cations calcium (Ca), magnesium (Mg), sodium (Na), and the anions chloride (CL), sulfate, and carbonate, and other ions in water. Treating produced water and removing Ca, Mg, and Na to the levels identified in the proposed rule will create an EC value much less than the 233 µmhos/cm level established in the same rule.

In addition, meeting the maximum value of 0.5 in the rule for SAR would result in a violation of the minimum standards established for Ca and Mg. In turn, meeting the average treatment standards for Ca, Mg, and Na, would result in a violation of the proposed standard of 0.5 for SAR.

RESPONSE: The board acknowledges that there are inconsistencies among the limitations specified in New Rule VIII. This issue is another reason for not adopting the proposed rules.

COMMENT NO. 65: Some level of ions in water, such as Ca and Mg, are beneficial for most water uses and therefore limits on these constituents are typically not controlled by water quality standards. Limits on these ions and salts are generally accomplished by adopting EC and TDS standards, thereby establishing minimum and maximum levels on salts in a water body. Normally, TDS standards for drinking water allow Ca and Mg concentrations of 100 mg/L, as appropriate and beneficial, and restrict levels above 300 mg/L. Levels below this are not recommended because of the aggressiveness of the resulting water's ability to leach heavy metals and toxic minerals into the water. In addition, the low alkalinity level will significantly reduce the buffering capacity of the water.

RESPONSE: The record is inconclusive as to the problems associated with the low effluent limits established in New Rule VIII. Due in part to the fact that these problems are unresolved, the board has determined that it will not adopt New Rule VIII.

COMMENT NO. 66: For irrigation and livestock use, Ca, Mg, and EC values can be significantly higher than that recommended for drinking water. Therefore, the

proposed standards for Ca and Mg of 0.1 and 0.6 mg/L, depending on the use, are at least 1000 times below the generally accepted levels for drinking water and almost 10,000 times below the general levels appropriate for livestock and irrigation use.

RESPONSE: The board is aware that the effluent limitations are well below the levels typically established to protect beneficial uses. Since the board is declining to adopt the effluent limitations in New Rule VIII, no change to those limits will be made in response to this comment.

COMMENT NO. 67: The proposed effluent limit of 0.5 for SAR is unnecessarily restrictive and well below ambient conditions in the Powder River Basin. More importantly, no single SAR level defines irrigation suitability. Instead, irrigation suitability of a water body depends upon the relationship between EC and SAR in the water. Depending on the EC levels, SAR levels as high as 20 pose no risk to irrigation. Given these facts, there is no rational basis for the proposed effluent limit of 0.5 for SAR.

RESPONSE: The proposed effluent limit for SAR is not intended to protect beneficial uses, as suggested by the commentor, but is proposed as an end-of-the-pipe limit that can be met most of the time using current treatment technologies. Since the board is not adopting the effluent limits as explained elsewhere in these Responses, no change to the effluent limit for SAR will be made in response to this comment.

COMMENT NO. 68: New Rule VIII would impose an effluent limit of less than 1 part per million for Ca and Mg. This is an extremely low level. The board has offered no reason for imposing effluent levels at this level.

The proposed effluent limits are unreasonable given that Ca and Mg have no adverse effect on stream or irrigation quality, but rather can have beneficial effects on water quality. For example, the presence of Ca and Mg in a stream buffer can help mitigate the adverse effects of sodium. Given that New Rule VIII would severely limit and reduce SAR in the Tongue and Powder rivers, it is incongruous to also severely limit Ca and Mg, which act to moderate the adverse affects of sodium in water. The board needs to explain how the proposed limits on Ca and Mg interact with sodium and the proposed limit for SAR and explain its reasons for adopting these limits.

RESPONSE: As explained throughout these responses, the board is not adopting the effluent limits set forth in New Rule VIII primarily due to a lack of evidence proving the technical and economic feasibility of meeting the new limits. The board also recognizes that there are issues, such as raised in this comment, which would need to be addressed if the rules were adopted.

COMMENT NO. 69: The EC standard of 233 µmhos/cm or 0.2 dS/m is overly restrictive and has no rational basis. Very low salinity water (or water with an EC less than the 0.2 dS/m level proposed in New Rule VIII, commonly known as "hungry water") may adversely impact soil quality. According to the United Nations Food and Agricultural Organization:

> Low salinity water is corrosive and tends to leach surface soils free of soluble minerals and salts, especially calcium, reducing their strong stabilizing influence on soil aggregates and soil structure. Without salts and without calcium, the soil disperses and the dispersed finer soil particles may fill many of the smaller pore spaces, sealing the surface and greatly reducing the rate at which the water infiltrates the soil surface.

Thus, rather than ensuring an agricultural use for the Tongue and Powder river basins, the effluent limit of 0.2 dS/m for EC may actually contribute to the formation of "hungry water" which may diminish soil quality within those basins and harm the very use the rules are intended to protect.

RESPONSE: The board acknowledges that there are unresolved issues that would need to be explained and resolved prior to the board's adoption of the effluent limitations in New Rule VIII. Consequently, the board is not adopting any of the limitations in the rule due in part to these unresolved issues.

MISCELLANEOUS COMMENTS

COMMENT NO. 70: The proposed rule violates the Montana Environmental Policy Act (MEPA) because the environmental consequences of requiring reinjection, of the waiver process, of treatment, and of classifying EC and SAR as "harmful" for purposes of nondegradation review have not been studied by the board or the department.

RESPONSE: Since the board has determined that it will not adopt the proposed rule requiring reinjection and the accompanying waiver process, the requirements of MEPA do not apply to the board's decision to take no action on those rules.

Similarly, the board is not adopting technology based treatment requirements. Furthermore, adoption of treatment requirements would not trigger MEPA because no treatment can occur without further state action from the Board of Oil and Gas Conservation (BOGC) and from the department. According to the Record of Decision (ROD) adopted by the BOGC, environmental impacts from a proposed CBNG project, including treatment, will be analyzed under MEPA during its review of the Plan of Development for the project. In addition, any proposal to treat and discharge CBNG water is subject to the requirement to obtain an MPDES from the department prior to discharging. Since any proposal to treat must first be approved by the BOGC and the department, the approval of those agencies is the "state action" that triggers an analysis of the environmental impacts of treatment under MEPA as required by the board's rules.

Although the board is adopting the amendment classifying EC and SAR as "harmful" for purposes of conducting nondegradation review, such a review will only occur when the department receives an application for an MPDES permit requesting a "new or increased discharge" for these parameters. The department's action on the MPDES application will be the "state action" that triggers an analysis of the environmental impacts of classifying EC and SAR as "harmful." Because there are a number of ways that a permittee could comply with the nondegradation rules as amended by this rulemaking, meaningful analysis can be done at that time.

COMMENT NO. 71: The amendment to ARM 17.30.670(7) deletes "unaltered ground water from coal bed methane production" and replaces that phrase with "methane wastewater" with literally no supporting rationale or justification for doing so.

RESPONSE: The board does not consider the deletion of "unaltered ground water" and the amendment substituting "methane wastewater" for the deleted term to be a substantive change to the existing rule. Since the Ninth Circuit has found that "unaltered ground water" is an "industrial waste" because it is an "unwanted byproduct" of CBNG extraction, the board believes that the terms "methane wastewater" and "unaltered ground water" are interchangeable. See, NPRC v. Fidelity Exploration and Development Co., 325 F.3d 1155 (9th Cir. 2003).

COMMENT NO. 72: The board has provided no rationale for repealing the nonseverability clause in ARM 17.30.670 because none exists. In 2003, the board logically and reasonably adopted a nonseverability clause due to the interrelated and interdependent nature of the numeric standards set forth in (2) through (5) of the rule, and the means prescribed for determining compliance with those standards in (6) and (7). Logically, if the method of determining compliance in (6) is declared invalid, then the actual numeric water quality standards set forth in (2) through (5) would have no useful function since the method of determining compliance is void. No reason has been provided for repealing the severability clause in this rulemaking.

RESPONSE: The board disagrees that a reason for repealing the nonseverability clause does not exist. In 2003, the board adopted the nonseverability clause in order "to preserve the board's primary objective of adopting numeric standards that will protect all existing and designated uses of the waters without unnecessarily restricting discharges that will not harm those uses." 2003 Montana Administrative Register (MAR) at page 799, Issue No. 8. At the time, the board was concerned that a court might invalidate the narrative nonsignificance criteria for EC and SAR in (6) and judicially impose numeric nonsignificance thresholds that the board had already considered and rejected. Id. Since the board is amending the rule to eliminate the narrative nonsignificance criteria in (6), the board's original reason for adopting the nonseverability clause is no longer valid. The board is now repealing the clause because it serves no useful purpose.

COMMENT NO. 73: Comments submitted by members of the Montana Legislature stated that the intent of the rulemaking is to circumvent the intent of that legislative body. Their comments stated that many of the issues associated with CBNG have been - and will continue to be - considered by the Legislature and are appropriate for legislation rather than rulemaking.

RESPONSE: The board has authority under 75-5-305, MCA, to adopt effluent limitations for categories of industries, including the coal bed methane industry. The board also has authority under 75-5-301(2)(c), MCA, to adopt rules that establish significance levels under the nondegradation provisions of the water quality laws. Thus, the Legislature has delegated these functions to the board. In addition, Title 2, chapters 3 and 4, MCA, authorize the Environmental Quality Council to review and comment on board rules. Although the council submitted an

objection to the portion of the rules relating to reinjection, it did not submit an objection to the nondegradation rule amendment. However, pursuant to a request from 15 legislators, an economic impact statement on the rulemaking was prepared.

COMMENT NO. 74: Commentors supporting the amendment of ARM 17.30.670(7) argue that requiring the use of the seven-day average, one in ten year flows (7Q10) for CBNG permits is consistent with the way the department develops limits for all other permits and is appropriate for limiting discharges at critical low flows. Commentors opposing the mandatory use of the 7Q10 flow in CBNG permits point out that the requirement adds nothing, since ARM 17.30.635 already requires the use of 7Q10 for all permits, including CBNG permits.

RESPONSE: The board agrees that requiring the use of the 7Q10 for CBNG discharges is consistent with the way the department develops permit limits for all other discharges. The board notes that the reason the department consistently uses the 7Q10 for all permits is that the requirement to use the 7Q10 already exists in Montana's surface water quality standards regulations (ARM 17.30.635(4)) and in Montana's mixing zone rules (ARM 17.30.516). Since the requirement to use the 7Q10 already exists and applies to CBNG discharges as well as all other discharges, the board is declining to adopt the mandatory use of the 7Q10 in ARM 17.30.670(7) as originally proposed.

COMMENT NO. 75: Some commentors object to the deletion of the mandatory flow-based permit limits for CBNG discharges in ARM 17.30.670(7) by arguing that the deletion does nothing to protect beneficial uses and would remove the department's flexibility to derive appropriate permit limits.

RESPONSE: The board disagrees that removing the mandatory flow-based permit limits for CBNG discharges, as proposed in the amendment of ARM 17.30.670(7), would limit the department's discretion to derive appropriate permit limits. Instead, the removal of the requirement would give the department the discretion to derive appropriate permit limits using either a flow-based approach or a conventional approach. Accordingly, the board is amending ARM 17.30.670(7) to delete the mandatory flow-based requirement as originally proposed.

Reviewed by: BOARD OF ENVIRONMENTAL REVIEW

/s/ John F. North
JOHN F. NORTH
Rule Reviewer

By: */s/ Joseph W. Russell*
JOSEPH W. RUSSELL, M.P.H.
Chairman

Certified to the Secretary of State May 8, 2006.